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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/040,059	10/26/2001	David F. Bocian	407T-300800US	9383
22434	7590	10/10/2006	EXAMINER	
BEYER WEAVER & THOMAS, LLP			CHO, JENNIFER Y	
P.O. BOX 70250			ART UNIT	
OAKLAND, CA 94612-0250			PAPER NUMBER	

1621

DATE MAILED: 10/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/040,059	BOCIAN ET AL.	
	Examiner	Art Unit	
	Jennifer Y. Cho	1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-98 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-98 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-32, drawn to a process of coupling an organic molecule to a surface of a Group IV element through an oxygen bond, classified in class ~~556~~, subclass various.
- II. Claims 33-37, drawn to a chemical surface coupled to an organic molecule through an oxygen bond, classified in class 556, subclass various.
- III. Claims 38-69, drawn to a process of coupling an organic molecule to a surface of a Group IV element through a sulfur bond, classified in class 556, subclass various.
- IV. Claims 70-82, drawn to a redox-active substrate comprising a silicon or germanium surface having a redox-active molecule attached through a Si-O, Si-S, Ge-O or Ge-S bond, classified in class 556, subclass various.
- V. Claims 83-96, drawn to an apparatus for storing data, classified in class , subclass various.
- VI. Claim 97, drawn to a process for making an ordered molecular assembly through a Si-O or a Si-S bond, classified in class 29, subclass various.

VII. Claim 98, drawn to a process for making an ordered molecular assembly through a Ge-O or a Ge-S, classified in class 29, subclass various.

Groups I and III are separate and distinct processes, which vary materially in the structure, composition and element of the products used for the processes. In Group I, the process of coupling is generally through a Si-O or a Ge-O bond. In Group III, the process of coupling is generally through a Si-S or a Ge-S bond. The compounds used in these processes are divergent and chemically different and thus result in the processes being patentably distinct, i.e. a reference anticipating the elected subject matter would not render obvious the other inventions.

Groups II and IV are separate and distinct products, which vary materially in structure, composition and element. In Group II, the chemical surface is coupled generally through a Si-O or a Ge-O bond. In Group IV, the process of coupling is through a Si-O, Ge-O, Si-S or a Ge-S bond. These compounds are divergent and chemically different and thus result in them being patentably distinct, i.e. a reference anticipating the elected subject matter would not render obvious the other inventions.

Groups VI and VII are separate and distinct processes, which vary materially in the structure, composition and element of the products used for the processes. In Group VI, the process for making an ordered molecular assembly is through a Si-O or a Si-S bond. In Group VII, the process for making an ordered molecular assembly is through a Ge-O or a Ge-S. The compounds used in these processes are divergent and chemically different and thus result in the processes being patentably distinct, i.e. a

reference anticipating the elected subject matter would not render obvious the other inventions.

Groups (I & III) and (II & IV) are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, though Groups (I & III) are generally coupled through a Si-O or a Ge-O bond, but there can be other Group IV elements that can be used theoretically, e.g. C, Sn, Pb. Also the products of Group (II and IV) can be made by other methods, e.g. solid-phase synthesis.

Groups (I & III) and (VI & VII) are directed to related processes. The related inventions are distinct if the (1) the inventions as claimed are either not capable of use together or can have a materially different design, mode of operation, function, or effect; (2) the inventions do not overlap in scope, i.e., are mutually exclusive; and (3) the inventions as claimed are not obvious variants. See MPEP § 806.05(j). In the instant case, the inventions as claimed can have a materially different design, mode of operation, function, or effect. Groups (I & III) are generally coupled through a Si-O or a Ge-O bond, but there can be other Group IV elements that can be used theoretically, e.g. C, Sn, Pb. Also the method of coupling of Groups (I & III) does not necessarily make the ordered molecular assembly required in Groups (VI & VII). Furthermore, the inventions as claimed do not encompass overlapping subject matter and there is nothing of record to show them to be obvious variants.

Groups (II & IV) and (VI & VII) are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, Groups (II & IV) can be made by other methods; e.g. solid-phase synthesis.

Group V and Groups (I & III) are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, though Groups (I & III) are generally coupled through a Si-O or a Ge-O bond, but there can be other Group IV elements that can be used theoretically, e.g. C, Sn, Pb. Also the data storage medium of Group V can be made by other methods, e.g. DNA-wire synthesis.

Group V and (II & IV) are directed to related products. The related inventions are distinct if the (1) the inventions as claimed are either not capable of use together or can have a materially different design, mode of operation, function, or effect; (2) the inventions do not overlap in scope, i.e., are mutually exclusive; and (3) the inventions as claimed are not obvious variants. See MPEP § 806.05(j). In the instant case, the inventions as claimed can have a materially different design, mode of operation, function, or effect. In the instant case, the chemical surface products of Groups (II & IV) are materially different in function than the data storage medium of Group V.

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Furthermore, the inventions as claimed do not encompass overlapping subject matter and there is nothing of record to show them to be obvious variants.

Group V and Groups (VI & VII) are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the data storage medium of Groups V does not necessarily make the ordered molecular assembly of Groups (VI & VII). Also the product of Group V can be made by other methods, e.g. DNA wire synthesis.

Election of Species

This application contains claims directed to the following patentably distinct species:

The organic molecule of claim 11 comprising:

- a. porphyrinic macrocycle
- b. metallocene
- c. polyenes
- d. fulvalenes
- e. metal coordination complex
- f. buckyball
- g. triarylamine

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- h. phenylenediamine
- i. xanthene
- j. flavin
- k. azines
- l. acridine
- m. quinoline
- n. bipyridyls
- o. tetrathiotetracene
- p. peri-bridged naphthalene dichalcogenide

The surface of claims 1-7 comprising:

- a. silicon
- b. germanium
- c. doped silicon
- d. doped germanium
- e. hydrogen passivated surface

The contacting of the solution on the surface of claims 17-21 comprising:

- a. contact printing
- b. inkjet printing
- c. spraying or dropping
- d. coating the surface

e. etching regions of surface to remove the organic molecule

The alcohol terminated organic molecule of claim 22 comprising:

- a. primary alcohol
- b. secondary alcohol
- c. tertiary alcohol
- d. aryl alcohol

The species are independent or distinct because the compounds have different chemical structures, composition and elements; and the variations in the contacting of the solution on the surface are distinctly different in mode, method and effectiveness.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claim 1 is generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which depend from or otherwise require all the limitations of an allowable generic claim as provided by 37 CFR 1.141. If claims are added after

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the election, applicant must indicate which are readable upon the elected species.

MPEP § 809.02(a).

Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions have acquired a separate status in the art due to their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the

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above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species or invention to be examined even though the requirement be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

The election of an invention or species may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse.

Should applicant traverse on the ground that the inventions or species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions or species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C.103(a) of the other invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer Y. Cho whose telephone number is (571) 272-6246. The examiner can normally be reached on Mon-Fri from 9 AM to 6 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thurman Page, can be reached on (571) 272-0602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JC JC

THURMAN K. PAGE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1800